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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,330	07/18/2003	Shyam Keshavmurthy	DWH-11602/29	3284

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EXAMINER

BARNES, CRYSTAL J

ART UNIT	PAPER NUMBER
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2121

DATE MAILED: 07/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p align="center">10/623,330</p>	<p>Applicant(s)</p> <p align="center">KESHAVMURTHY ET AL.</p>	
	<p>Examiner</p> <p align="center">Crystal J. Barnes</p>	<p>Art Unit</p> <p align="center">2121</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6,8-15,18 and 21 is/are rejected.
- 7) ☐ Claim(s) 7,16,17,19,20 and 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The following is an initial Office Action upon examination of the above-identified application on the merits. Claims 1-22 are pending in this application.

Priority

2. Applicant has complied with the conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 119(e).

Drawings

3. The drawings are objected to under 37 CFR 1.83(a) because they fail to show various substeps associated with the overall process as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).
4. The drawings are objected to because figures 3-5 require labels to clearly identify the items in the figures.

5. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

6. The disclosure is objected to because of the following informalities: the various substeps should have section headings to facilitate referencing back to previous described sections. Instead of referencing "sections 1 and 2" on page 8 line 12, use section headings (i.e., Creating a Part, Creating Area Clearance, Finish as You Go Strategy, Creating Internal Cavities and Channels, Soft Fixturing, etc.). It is unclear what "methods 1-6" on page 9 lines 8-9 refers to. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 5, 6, 8 and 12-14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

As per claims 5 and 8, the specification fails to disclose calculating temperature and excitation amplitude or frequency to fabricate the object. On page 6 lines 22-25, pressure is disclosed.

As per claim 6, the specification fails to disclose fiducial marking. On page 8 lines 5-7, work-holding fixtures are disclosed.

As per claim 12, the specification fails to disclose recognizing tool size, heated wire or laser beam size required to fabricate the object. On page 5 lines 16-22, region size is disclosed.

As per claim 13, the specification fails to disclose using a slab generation technique. On page 7 lines 8-9, a Delaunay triangulation technique is disclosed.

As per claim 14, the specification fails to disclose fabricating the object vertically or horizontally. On page 8 lines 9-17, frame of reference and position are disclosed.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1-4, 9-12, 15, 18 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by USPN 6,823,230 B1 to Jamalabad et al.

As per claim 1, the Jamalabad et al. reference discloses an automated manufacturing method, comprising the steps of: receiving a description (see column 1 lines 25-28, "computer-aided design software") of an object ("desired article") to be fabricated (see column 1 lines 31-32, "computer-aided machining process") having a desired geometry (see column 1 lines 34-37, "three-dimensional objects"); identifying regions (see column 1 lines 29-31, 38-40, "material") in which at least one automated material addition process (see column 2 lines 38-41, "additive manufacturing") and at least one automated material subtraction process (see column 2 lines 25-27, "subtractive machining") should occur to fabricate the object ("desired article") in accordance with the description; generating tool paths (see column 2 lines 29-32 and 41-43, "tool path") associated with the material addition ("additive manufacturing") and subtraction processes ("subtractive machining"); and

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fabricating the object ("computer-aided machining process") in accordance with the tool paths ("tool path").

As per claim 2, the Jamalabad et al. reference discloses the regions are layers, volumes, lines (see column 2 lines 33-35, "line segments") or voxels.

As per claim 3, the Jamalabad et al. reference discloses the automated material subtraction process ("subtractive machining") includes milling (see column 2 line 27, "milling") or the use of lasers, knives, hot wires, arc cutters ("machine cutting element"), or plasmas cutters ("machine cutting element").

As per claim 4, the Jamalabad et al. reference discloses the automated material addition process ("additive manufacturing") includes solid-state or fusion welding, laser material deposition (see column 7 lines 44-48, "fused deposition techniques"), metal spraying, or adhesive bonding.

As per claim 9, the Jamalabad et al. reference discloses further including the step of blending the regions (see column 14 lines 8-10, "vertices") to eliminate seams (see column 14 line 24, "internal voids") that would be generated due to the subtractive process used.

As per claim 10, the Jamalabad et al. reference discloses further including the step of creating enclosed and overhanging features (see column 9 lines 37-39,

"overfilled regions 198") using the additive or subtractive manufacturing processes, or a combination thereof.

As per claim 11, the Jamalabad et al. reference discloses further including the steps of: identifying changes (see column 9 lines 39-41, "under-defined, over-defined") in the desired geometry ("original design intent"); removing excess material ("relocation of tool path vertex") to achieve the desired geometry ("original design intent").

As per claim 12, the Jamalabad et al. reference discloses further including the steps of: analyzing the description ("computer-aided design software") of the object ("desired article") to be fabricated ("computer-aided machining process") to recognize the tool size (see column 7 lines 40-44, "bead 42 diameter, width, length"), heated wire or laser beam size required to fabricate the object ("computer-aided machining process") in accordance with the description.

As per claim 15, the Jamalabad et al. reference discloses further including the step of generating enclosed cavities (see column 14 lines 1-4, "inner contour path 554") within the object ("blade 550") during the fabrication ("computer-aided machining process") thereof.

As per claim 18, the Jamalabad et al. reference discloses a tool path (see column 2 lines 40-43, "outermost tool path") associated with additive processing ("additive") is based on the nature of the additive process used (see column 2 lines 44-45, "material depositing head").

As per claim 21, the Jamalabad et al. reference discloses certain features (see column 9 lines 38-41, "overfilled regions 198") are deposited with excess stock ("over-defined") based on feature geometry ("original design intent"); and removing material ("relocation of tool path vertex") to enhance the deposition process ("original design intent"), or speed the build rate of the object.

Allowable Subject Matter

11. Claims 7, 16, 17, 19, 20 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following references are cited to further show the state of the art with respect to rapid prototyping in general:

USPN 6,859,681 B1 to Alexander

USPN 6,780,368 B1 to Liu et al.

USPN 6,376,148 B1 to Liu et al.

USPN 6,274,839 B1 to Stone et al.

USPN 5,398,193 to deAngelis

US Pub. No. 2002/0149137 A1 to Jang et al.

US Pub. No. 2002/0129485 A1 to Mok et al.

US Pub. No. 2002/0093115 A1 to Jang et al.

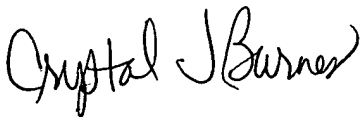
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Crystal J. Barnes whose telephone number is 571.272.3679. The examiner can normally be reached on Monday-Friday alternate Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight can be reached on 571.272.3687. The fax

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phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



CJB

22 July 2005